

LETTERS TO THE EDITOR.

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Collateral Heredity Measurements in Schools.

As a result of the appeal, made in NATURE last June, for aid in the measurement of pairs of brothers and sisters, I have received friendly help from a number of masters and mistresses up and down the country. I think I have received between 400 and 500 data forms properly filled in. Considerable as this assistance has been, I would still beg for further aid, as I want the collection to reach, if possible, 1000 pairs for each fraternal relationship. I have at the present time several head-spanners free, and shall only be too glad to send one to any teacher who will undertake the necessary observations on six to ten pairs of brothers or sisters. As I said in my former letter, the determination of the intensity of hereditary resemblance is a very important matter, and it can, at any rate in the case of man, only be achieved by co-operative effort on the part of those interested in science. KARL PEARSON.

University College, London, October 9.

The White Rhinoceros on the Upper Nile.

It may interest your readers to learn that during his recent notable traverse of Africa from South to North, Major A. St. Hill Gibbons shot on the Upper Nile, near Lado, a rhinoceros which he considered to be the white or square-mouthed rhinoceros (*R. sinus*), hitherto only known from south of the Zambesi, and now, unhappily, nearly extinct there. His determination is fully borne out by the skull, which I have had the pleasure of examining, and which shows all the many characters that distinguish *R. sinus* from the common species, *R. bicornis*.

That a rhinoceros of this group existed in Central Africa has been suspected before. Dr. Gregory in "The Great Rift Valley," mentions having seen in Leikipia, but failed to shoot, three specimens which he believed to be *R. sinus*. Some years earlier Count Teleki shot a "White Rhinoceros" in the same district, but his account has more reference to the colour than to the specific determination of the animal, and his specimen may only have been a pale-coloured *R. bicornis*.

Now, however, Major Gibbons has fortunately set the matter at rest, as there can be no question that his animal is not *R. bicornis*, but belongs to the rarer southern form, hitherto supposed to be practically extinct.

The discovery of this animal in the Nile watershed brings it geographically nearer to its European and Siberian ally, the Pleistocene *R. antiquitatis*, both species being in turn, no doubt, offshoots of the Pliocene *R. platyrhinus* of the Siwaliks.

Natural History Museum, OLDFIELD THOMAS.
October 12.

P.S.—This find has an interesting parallel in Mr. W. Penrice's discovery in Angola of a zebra allied to the true Cape Zebra (*Equus zebra*), now also nearly extinct there. But in that case the species proves different by its shorter hair, and much broader white striping, and has been named *Equus penricei*.

Disease of Birch Trees in Epping Forest and Elsewhere.

IN Epping Forest, and in other districts around London, birch trees have been attacked during the late summer by a disease which causes them to die very rapidly. In a portion of the Forest known as Lord's Bushes, thirteen diseased and twenty-four completely dead trees were noted on June 10 within an area of about one and half acres.

A few were attacked in the Forest in the summer of 1899, but it was not till this year that the disease appeared in such a destructive form. On Chiselhurst Common, Hayes Common and Keston Common no signs of the disease were evident in the early summer, but now dead or diseased trees may be found in great numbers. Trees attacked in a similar manner occur at Walton-on-Thames, by the canal between Weybridge and Woking, at Lewisham and at Westerham.

The disease is probably due to a micro fungus, *Melanconis stilbostoma*, Tul., for it appears on the branches of both living and dead trees. The diagnosis of the disease is almost precisely that of *Valsa oxystoma*, described as the destroyer of *Alnus viridis* in some parts of the Tyrol.

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It would be interesting to know if any of your readers have observed the disease in the Midlands or in the north of England. ROBT. PAULSON.

10, Denholme Road, Maida Hill, October 8.

Sunspots and Frost.

IN the study of winter cold, we find, I think, some striking contrasts associated with different parts of the sunspot-curve. These contrasts, whether they are really due to sunspot variations or no, seem worthy of attention as a practical matter, and an occasion for observing whether such relations are maintained in future.

Taking the Greenwich records since 1841, let us see how many frost days there were in each three-year group following the sunspot maxima 1848, 1860, 1870, 1883 and 1893; and how those sums are related to the average (which is 164 in three years). The following table shows this:—

Three-year groups	^a Frost days	Relation to average
1849-51	147	- 17
1861-63	118	- 46
1871-73	131	- 33
1884-86	160	- 4
1894-96	133	- 31
	689	- 131

Thus, each of those three-year groups was mild, in respect of frost days, and there was a total deficiency of 131 days.

Now, let us do the same with the three-year groups following the minima, 1843, 1856, 1867, 1878, 1889:—

Three-year groups	^b Frost days	Relation to average	^c <i>b - a</i>
1844-46	166	+ 2	+ 19
1857-59	180	+ 16	+ 62
1868-70	170	+ 6	+ 39
1879-81	210	+ 46	+ 50
1890-92	201	+ 37	+ 68
	927	+ 107	+ 238

In this case, each three-year group is over average, and the total excess is 107 days. The added column (*b - a*) shows that the three-year groups after minima had altogether 238 frost days more than the groups after maxima, giving an average of 47.6 for each pair of groups compared.

If we group together the fourth, fifth, sixth and seventh years after maxima (*i.e.* '52-55, '64-67, '74-77 and '87-90), and count the frost days in those four-year groups, we find that the latter share the character of the three-year groups after minima, each having an excess of frost days over the (four-year) average. We are now in the last year of another of these groups (*viz.* 1897-1900).

Analysing those mild three-year groups after maxima, we find out of a total of fifteen years only four with more than the average of frost days, and only one group (1884-86) in which two of the three years had an excess.

It occurred to me to examine what kind of summers we had in those mild groups, and the following curious table was arrived at:—

	M.T. Summers.	Relation to average.
1849-51	61.2	av.
1861-63	60.4	- .8
1871-73	61.7	+ .5
1884-86	61.2	av.
1894-96	61.6	+ .4

Thus, the divergence from the average never gets beyond a decimal value. Analysing, one finds only three of those fifteen summers in which the divergence gets beyond a decimal value (*viz.* -2.4, -1.1 and +1.4). The summers of three-year groups after minima might be shown to have a distinctly opposite character. But I do not lay stress on this.

ALEX. B. MACDOWALL.

Simple Experiments on Phosphorescence.

IN consequence of reading your note in NATURE of September 27, on M. Gustave le Bon's paper on various forms of phosphorescence, the following experiments were tried. A surface, previously dark, of the sulphide of calcium, was exposed to the

radiation of a blackened vessel of boiling water; this gave no decisive result.

On repeating the experiment with a smoothing iron at the temperature ordinarily used, the surface in about a minute glowed brightly. There is this difference from the excitement by bright daylight, or gaslight, that the glow is comparatively transient.

This renders it probable that a cylinder of iron heated by a spirit flame duly concealed would act as M. le Bon's dark lamp does.

A. M. M.

MEXICAN SYMBOLISM.¹

A RESIDENCE for some years among the Huichol Indians of Mexico has enabled Dr. Carl Lumholtz to enrich ethnology with a wonderfully detailed and exhaustive memoir on their symbolism, and our thanks are due, not only to the author, but to the authorities of the American Museum of Natural History for the appearance of this most valuable study, which is lavishly illustrated by more than three hundred figures in the text and four plates, three of which are coloured heliotypes.

It is extremely fortunate for students of American archæology and comparative religion that the symbolism of pagan Mexican Indians should be minutely studied, as this will throw light on the meaning of the inscriptions on ancient Mexican monuments, and will afford illustrations for the comparative studies of cults.

All sacred things are symbols to primitive man, writes Dr. Lumholtz, and the Huichols seem literally to have no end of them. Religion is to them a personal matter, not an institution, and therefore their life is religious, and from the cradle to the grave wrapped up in symbolism. From their symbolism it may be inferred that the main thought of their prayers is food—corn, beans and squashes. Even in the hunting of the deer, the primary consideration is that the success of the chase means good crops of corn. Agriculture depends upon rain, therefore most of the symbolic objects express, first of all, prayers for rain, and, by implication, for food, and then prayers for health, good fortune and long life. In many cases the supplicant himself is represented on symbolic objects in the shape of a human figure or a heart; but in others the god is thus depicted.

The act of sending a prayer to a god is symbolised by attaching a representation of the prayer to an arrow, the painting of the rearshaft of the arrow is symbolic of the special deity to whom the prayer is offered. In other cases, the prayer is directed to the god by placing the symbolic object representing the prayer to the temple of the deity, or by tying it to his chair, or placing it in his votive bowl.

Speaking in a general way, individual or personal prayers are conveyed by arrows or back-shields; these latter are symbols of the rectangular shield that the Huichol warrior wore to protect his back. The main idea of the back-shield is that it protects against the heat of the sun, and prayers expressed by it are largely for health, but also for protection against evil, sickness, accident, &c. Back-shields represent prayers of all kinds, such as prayers for rain, good crops, and even that the supplicant may have children; it should be remembered that the same mat served the warrior as back-shield and bed. Tribal prayers were mostly conveyed by the usually circular front-shields. Personal and tribal prayers may also be conveyed by "eyes." These are crosses of bamboo splints, or straw interwoven with coloured threads in the form of a diamond. The eye is the symbol of the power of seeing and understanding unknown things; the prayer expressed by this symbolic object is that the eye of the god may rest on the supplicant.

The diminutive sandals of an ancient pattern that are

¹ "Symbolism of the Huichol Indians," by Carl Lumholtz. Memoirs of the American Museum of Natural History. Vol. iii. Anthropology II. to. Pp. 228. (1900.)

attached to a prayer-arrow may be taken as an example of symbolism. Such sandals are now only worn by shamans at the greatest feast of the Huichols—that which is held for the underworld. They therefore become the symbol of a prayer that this feast may come off; also that nothing untoward may happen to the shaman at this feast; but as the feast cannot be celebrated unless a deer has been killed, a pair of such sandals also expresses a prayer for luck in killing deer. In olden time only men wore sandals, which at that time were of the ancient pattern referred to; thus these sandals are also used to express a woman's prayer for a husband.

Practically the same design may be the symbol of various objects, for example, curved lines in general indicate serpents, but when there are dots between curved lines they mean ears of corn in the fields. Bands of curved lines with dots between them are the tracks of wind, rain and water in the fields. Zigzag lines stand not only for rain-serpents but also for lightning, the sea surrounding the world, hills and valleys projected on the horizon, bean plants and squash vines. A cross refers to the four cardinal points, but also signifies money, sparks, &c.

There is a further complication in the strong tendency to see analogies, even the most heterogeneous phenomena are considered as identical. For instance, the following are some of the objects that are believed to be serpents: most of the gods and all the goddesses, the pools of water and springs in which the deities live, the wind sweeping through the grass, the moving sea and ripples of water, flowing rivers, darting lightning, rain, fire, smoke, clouds, their own flowing hair, their girdle ribbons, pouches, wristlets, anklets, maize, bow, arrow, tobacco gourd, trails of men on the land—all are considered as serpents.

On reading this suggestive memoir, one is struck with the fact that the religion of the Huichols contains elements appropriate to two distinct stages of culture. In former ages their ancestors were evidently nomad hunters, who subsisted mainly on the meat of deer, which they killed with bows and arrows. Probably at this period they shot their arrows in the air in magical rites, so as to ensure the killing of deer; possibly also they attached pictographs or symbols to the arrows as messages or prayers to the gods, but this was almost certainly a later phase. On acquiring the art of agriculture, they continued the old practices for ensuring a sufficient food supply. According to the Huichol myths, corn was once deer, and at the feast preparatory to the clearing of the cornfields the Huichols drink the broth of deer-meat, which they call "making corn," and the blood of deer is sprinkled on the grains of corn before they are sown, that they may become equally sustaining, for the deer is the symbol of sustenance and fertility.

Departmental gods generally originate when a people become settled and take to agriculture. The prayer arrows would then be deposited in the houses of the gods. At this time, as at present, the moving principle in the religion of the Huichols was the desire of producing rain, and thus successfully raising corn, which now is their principal food; therefore is it that most of the symbolic objects express first of all prayers for rain and then for other blessings. Since the deer represents sustenance, it may easily be perceived why in their myths water sprang from the forehead of a deer.

There is no space to enter into the cult of that remarkable plant the "Hikuli" (*Anhalonium lewinii*), which is to them the plant of life—the life of the deer and the corn—and adds a further mystical element to this instructive transitional religion. The philosophy of life of these people may be best summed up in a statement by one of themselves. "To pray for luck to the god of fire and to put up snares for the deer—that is, to lead a perfect life."

ALFRED C. HADDON.